BINUS University

Academic Career: *Undergraduate / ~~Master~~ / ~~Doctoral~~ *)*			Class Program: *~~International~~/Regular/~~Smart Program~~/Global Class*)*		
☐ Mid Exam ☐ Short Term Exam	☑ Final Exam ☐ Others Exam : _____		Term : ~~Odd~~/Even/~~Short~~ *)		
☑ Kemanggisan ☐ Senayan	☑ Alam Sutera ☐ Bandung	☐ Bekasi ☐ Malang	Academic Year : 2019 / 2020		
Faculty / Dept. : School of Computer Science			Deadline	Day / Date : Tuesday / Jun 30th, 2020	
				Time : 17:00	
Code - Course : COMP6100 – Software Engineering			Class : All Classes		
Lecturer : Team			Exam Type : Online		
*) *Strikethrough the unnecessary items*					
The penalty for CHEATING is DROP OUT!!!					

I. Essay (50%)

1. Assume there are a total of 287 modules in the Version 1.25.221.11117 of a utility application. When the application is updated to version 1.25.221.11118, there are 21 modules fixed from several bugs, 10 modules added for user experience optimization, 8 modules added for security optimization, and 3 outdate modules deleted. On the version 1.25.221.11119, there are 38 modules fixed for bugs, no added modules, and 1 outdated module deleted.
   a. **(5%)** Calculate the Software Maturity Index (SMI) for the last 2 version releases.
   b. **(5%)** Based on the SMI on the last 2 version releases, is the product becoming more stable or less stable? Explain your answer in less than 50 words!

2. **(10%)** Any engineered product can be tested in one of two ways:
   - By knowing that the specified function has perform as it was expected to perform, and
   - By knowing that each internal unit inside a product are performed according to specification.

   The first test is done with Black Box Testing, and the second test is done with White Box Testing. Should you do both test in your testing process, or is it more preferrable to pick one of the testing strategies? Explain your answer as clear and as concise as possible in less than 100 words!

3. **(10%)** To ensure that your company make an objective assessment before making purchasing decision, a decision tree can be made to further calculate and estimate all possible costs.
   Build a decision tree <u>and</u> pick which option is more optimal for build-buy-contract decision of a CRM application based on the information provided in this table:

Decision	Adjustment	Probability	Expected Cost
Build	Simple	0.4	300.000.000 IDR
Build	Difficule	0.6	600.000.000 IDR
Buy	Minor changes	0.8	250.000.000 IDR
Buy	Major Changes	0.2	500.000.000 IDR
Contract	Minor Changes	0.7	225.000.000 IDR
Contract	Major Changes	0.3	450.000.000 IDR

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4. **(10%)** Prototyping is a powerful tool for developing new Innovative business models. Please describe your new innovative aspects from your final project prototype.

5. **(10%)** Explain about who your customer segment is in your final project. Also provide reason and analysis on how you decide on your customer segment.

II. Case (50%)

PopSolution Inc is a small IT Solution company based in Central Jakarta, Indonesia. They have just finished their sales pitch meeting with their latest potential client, an automobile sales company based in South Jakarta. The company was very satisfied with their portofolios, and asked them to provide a final quotation on the price that will be agreed upon.

As for the project detail, the client asked for a simple web application with 3 main functions: (1) a homepage showing the company's credibility and location, (2) a page to list all cars the company is selling, and (3) a Contact Us page where future customers can fill their data to further be contacted by the company's representatives. Since the transaction is too substantial to be handled in the application, all purchase will be done outside of the web application.

Every month, PopSolution spends 30.000.000 IDR for the overhead cost of all its employees. The organizational average productivity for the system of similar type is 25 FP/person-month. This means that with one person doing the job of 50 Function Point, it will take one month, with 2 persons doing the job, it will take half a month to finish.

As the new member of the development team, you are asked to prove your expertise on software estimation by providing the team with Function Point Analysis (FPA) on your next internal meeting. Your tasks are:

1. **(20%) List** <u>all</u> the External Inputs (EIs), External Outputs (EOs), External Inquiries (EQs), Internal Logical Files (ILFs), and External Interface Files (EIFs) that you identify should be on the system. You are allowed to add your assumptions as long as it is relevant.

2. **(10%) Calculate** the Unadjusted Function Point, Value Adjustment Factors, and the Function Point.

3. a. **(10%)** Provide estimation on project estimated **cost** (in IDR) and project estimated **time** (in person-month)! How long will it take to finish the project if there are 5 persons working for the project?

   b. **(10%)** What should you do if the client rejects your estimated cost and time, and negotiates with you for a lower price?

Here on the next page are some resources to assist you.
(P.S: You do not have to use all of the resources).

Value Adjustment Factor Table

No	General Systems Characteristics	Degree of Influence
1.	Data Communications	
2.	Distributed Processing	
3.	Performance	
4.	Heavily Used Configuration	
5.	Transaction Rates	
6.	Online Data Entry	
7.	Design for End User Efficiency	
8.	Online Update	
9.	Complex Processing	
10.	Usable in Other Applications	
11.	Installation Ease	
12.	Operational Ease	
13.	Multiple Sites	
14.	Facilitate Change	

FP Calculation Table

Information Domain Value	Count	Weighting Factor			FP Count
		Simple	Average	Complex	
EIs		3	4	6	
EOs		4	5	7	
EQs		3	4	6	
ILFs		7	10	15	
EIFs		5	7	10	
Count Total					

FP Component List Table

No	Component	FP Type	Complexity	Weighting Factor
1				
2				
3				
4				
…	Example Component 1	EQ	Average	5
…	Example Component 2	ILF	Complex	15
Count Total				

-- Good Luck --

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